

Remark

Applicant respectfully requests reconsideration of this application as amended.

Claims 1, 2 and 4 have been amended. No claims have been canceled. Therefore, claims 1-5 are now presented for examination.

35 U.S.C. §103 Rejection,

Merrill

The Examiner has rejected claims 1 and 5 under 35 U.S.C. §103(a) as being unpatentable over Merrill (U.S. Patent No. 5,962,844). Applicant respectfully disagrees. Claim 1 requires, in part, “a first digital converter coupled with the second sample-and-hold amplifier to receive serially the first plurality of analog signals, wherein the first digital converter converts the first plurality of analog signals to a digital key frame; a digital memory coupled with the first digital converter for receiving and storing the digital key frame; a differential amplifier coupled to the first and second sample-and-hold amplifiers generating an analog difference of the first plurality of analog signals and the second plurality of analog signals, wherein the first plurality of analog signals and the second plurality of analog signals are received serially from the second sample-and-hold amplifier and the first sample-and-hold amplifier, respectively.” Claims 1-5 require that the first plurality of analog signals is converted to and stored as a digital key frame reference signal. This provides a reference point for each of the digital differences that are provided by the difference amplifier. Additionally, the claims require that the analog signals are shifted out of the sample and holds in a serial manner.

Merrill et al. teaches an active pixel image cell with embedded memory. The pixel elements may be used to simultaneously produce signals corresponding to the photodiode outputs for successive frames or to produce an output representing the difference between the photodiode outputs for successive frames. Merrill does not teach or suggest storing a key frame determined by the first sensed image as required by the claimed invention while also performing an analog difference of the first key frame and the next successive frame. Additionally, Merrill does not teach or suggest that the plurality of signals are shifted out serially into the digital converters as required by the claimed invention. As Merrill fails to disclose or teach the invention as claimed, particularly the use of a key frame and differences of successive frames and the use of serial shifting, the rejection to the claims should be withdrawn and a favorable action on the merits solicited.

Similarly, Gordon fails to teach or disclose the use of a key frame simultaneously with the use of successive frame differences as claimed. Accordingly, Gordon and Merrill, alone or in combination, fail to disclose the invention and the rejections to claims 1-5 should be withdrawn.

Conclusion

Applicant respectfully submits that the rejections have been overcome by the amendment and remark, and that the claims as amended are now in condition for allowance. Accordingly, Applicant respectfully requests the rejections be withdrawn and the claims as amended be allowed.

Invitation for a Telephone Interview

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

Request for an Extension of Time

The Applicant respectfully petitions for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

Charge our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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Version With Markings To Show Changes Made

1. (Amended) An apparatus comprising:

[an] a plurality of analog [photocell] photocells adapted to capture light energy incident upon [it] them as a series of a plurality of analog signals;

a first sample-and-hold amplifier coupled to said plurality of photocells [photocell] and adapted to store a first plurality of analog [signal] signals of the series [of analog signals];

a second sample-and-hold amplifier coupled to the first sample-and-hold amplifier and adapted to store the first plurality of analog [signal] signals when the first sample-and-hold amplifier stores a second plurality of analog [signal] signals of the series [of analog signals];

a first digital converter coupled with the second sample-and-hold amplifier to receive serially the first plurality of analog signals, wherein the first digital converter converts the first plurality of analog signals to a digital key frame;

a digital memory coupled with the first digital converter for receiving and storing the digital key frame;

a differential amplifier coupled to the first and second sample-and-hold amplifiers generating an analog difference of the first plurality of analog [signal] signals and the second plurality of analog [signal] signals, wherein

the first plurality of analog signals and the second plurality of analog signals are received serially from the second sample-and-hold amplifier and the first sample-and-hold amplifier, respectively;

a second digital converter coupled [to] with said differential amplifier said converter transforming the analog difference into a digital value.

2. (Amended) An apparatus according to claim 1 wherein said second digital converter includes:

a voltage controlled oscillator;

a counter coupled to said oscillator, said oscillator setting the rate of increase of said counter.

4. (Amended) An apparatus according to claim 2, wherein said second digital converter includes:

a scaling signal supply, said supply adapting the output of said oscillator in a dynamic range consistent with ambient lighting to which said plurality of analog photocells are [photocell is] exposed.